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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,390	12/08/2003	Jeffrey D. Flammer	P03951	4528

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EXAMINER
NGUYEN, HUNG THANH

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 12/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/731,390	FLAMMER ET AL.	
	Examiner	Art Unit	
	HUNG T. NGUYEN	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,40 and 42-50* is/are pending in the application.

4a) Of the above claim(s) *47-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,40 and 42-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claims 47-50 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: applicant's newly submitted claims are directed toward flexible conductive layer is not originally presented.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 47-50 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-17, 40, 42, 44-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Stoperan (US 5,428,190).

Regard claim 1, 13: Stopperan discloses in figures 4-7, rigid-flex printed circuit comprising, least one rigid layer (100); wherein said at least one rigid layer (100)

comprises: at least one top side (122), and at least one bottom side (124); at least one first flexible layer (175) bonded to at least one first portion of said at least one top side (122); at least one second flexible layer (175) bonded to at least one second portion of said at least one bottom side (124); wherein said at least one rigid layer (100) comprises at least one first structural weakness (weakness includes element 106) at least one first selected location; wherein said at least one first structural weakness (weakness includes element 106) is adapted to facilitate breaking said at least one rigid layer (100) at such at least one first selected location into at least two rigid pieces to provide at least one first flexible connection formed by said at least one first flexible layer between such rigid pieces (it appears in figure 7 that 106 is capable of breaking into two pieces).

Regard claim 2: Stopperan discloses in figure 7, the rigid-flex printed circuit board wherein such first structural weakness comprises at least one score (106) that partially penetrates said at least one rigid layer.

Regard claim 4: Stopperan discloses in figure 7, at least one gap (gap between 122 and 124) at such at least one first selected location between said at least one rigid layer (explain above) and said at least one first flexible layer (explain above).

Regard claim 5: Stopperan discloses at least one adhesive (see column 9, lines 10-68) to bond at least one flexible layer portion of said at least one first flexible layer (explain above) to at least one rigid layer portion of said at least one rigid layer (explain above); wherein said structural weakness comprises selective

absence of adhesive at such selected location between said at least one rigid layer (explain above) and said at least one flexible layer (explain above).

Regard claim 6, 7, 16-17: Stopperan discloses in figure 7, at least one first structural weakness comprises at least one laser and one mechanical score (106).

Regard claim 8, 10, 11: Stopperan discloses the rigid-flex printed circuit board wherein said at least one rigid layer (explain above) comprises epoxy, fiberglass, polyimide (see column 12, lines 25-69).

Regard claim 9, 14-15: Stopperan discloses the rigid-flex printed circuit board wherein said at least one rigid layer (explain above) comprises metal (see column 16, lines 3-18), aluminum.

Regard claim 12: Stopperan discloses at least one first flexible layer (explain above) comprises at least one substantially flexible insulating layer (78), and at least one substantially flexible conductive layer (76); and said at least one rigid layer (explain above) comprises at least one substantially rigid insulating layer (83), and at least one conductive layer (82).

Regard claim 40: Stopperan discloses in figure 2, a rigid-flex printed circuit board comprising, insulating means (83) for conductive portions circuit board; electrically insulating of the rigid-flex printed conducting means for conducting electricity through portions of the rigid-flex printed circuit board; rigidity means (122, 124) for providing rigidity to portions of said conducting means; conversion means (portion of rigid and flex) for converting portions of rigidity means into a flexible means for flexing portions of said conductor means; wherein said

conversion means (portion of rigid and flex) comprises structural weakness means (explain above) for structurally weakening selected portions of said rigidity mean; wherein said structural weakness mean comprises at least one score (106) that partially penetrates said rigidity means.

Regarding claim 42: Stopperan discloses in figure 4, at least one first flexible layer comprises at least one top outermost layer (122); and said at least one send flexible layer comprises at least one bottom outermost layer (124).

Regarding claim 44: Stopperance discloses in figure 7, at least one second structural weakness (portion 106) at least one second selected location; said at least one second Structural weakness (portion of 106) is adapted to facilitate breaking said at least one rigid layer at such at least one second selected location into at least two second rigid pieces to provide at least one second flexible connection formed by said at least one second flexible layer between such second rigid pieces (figure 7 shows various 106 and each 106 is used to break into different pieces and each can be used for connection).

Regarding claim 45: Stopperan discloses in figures 6-7, at least one first flexible connection is structured and arranged to provide upwardly concave flexure at said at least one first selected location; and said at least one second flexible connection is structured and arranged to provide downwardly concave flexure at said at least one second selected location (figures 5-7 show the connection of first/second flexible).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 43, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stopperan (US 5,428,190) in view of Warner et al. (US 6,665,170).

Regard claim 3, 43, 46: Stopperan discloses in figure 7, the structural weakness comprises at least one top score on said at least one top side (106) at such at least one first selected location. Stopperan does not disclose at least one bottom score on said at least one bottom side such at least one first elected location.

Warner et al. discloses at least one bottom score on said at least one bottom side such at least one first elected location.

Stopperan and Warner et al. are analogous art because they are from the same field of endeavor to make circuit board.

Therefore, it would have been obvious for one ordinary skill in the art at the time of the invention to make boards of Stopperan to have top/bottom score as taught by Warner et al. for the benefit of breaking the circuit into pieces.

Response to Arguments

Applicant's arguments with respect to claims 1-17, 40, 42-45 have been considered but are moot in view of the new ground(s) of rejection.

Relevant Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Haas (US 5,121,297) teaches rigid and flex circuits, Hoyt (US 4,173,035) teaches flexible lighting strip, Smith (US 6,762,942) teaches flexible circuit connected by two substrate, Mckenney et al. (US 6,099,745) teaches rigid and flex circuit board, Sato (US 4,680,675) teaches printed circuit board terminal device, Isaacson (US 3,766,439) teaches flexible circuit board.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG T. NGUYEN whose telephone number is 571-272-5983. The examiner can normally be reached on 8:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, REICHARD DEAN can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HUNG NGUYEN 11/28/2006

HN

DEAN A. REICHARD
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12/11/06